

# Notes on rare clavarioid species (Fungi: Basidiomycota) in Patagonia, Argentina

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**Abstract:** The distributions of two clavarioid species, *Clavulinopsis laeticolor* (Berk. and M.A. Curtis) R.H. Petersen (Agaricales, Clavariaceae) and *Lentaria rionegrensis* R.H. Petersen (Gomphales, Lentariaceae), are extended and updated. Both species are poorly known in Argentina, and specifically in Patagonia; these species were cited only once in the 1960s and 1990s, respectively.

**Keywords:** clavarioid species, fungi, southern South America

According to the general diagnosis defined by Petersen (1988) the clavarioid fungi are characterized by having holobasidia and erect, simple columnar (clavate or “club fungi”) or branched (coraloid or “coral fungi”) basidiomata. This group of fungi is not homogeneous or monophyletic, so its taxonomic circumscription differs according to the authors. Most of the species are ubiquitous and thus have a worldwide distribution adopting different forms of nutritional modes, including saprotrophy, mutualism and parasitism (Dettinger and McLaughling 2006).

The first records of clavarioid fungi in Argentina were reported by Spegazzini (e.g., 1881, 1887b, 1909); and subsequently by Corner (1957), who published new contributions based on specimens collected by Singer, Wright and type materials of Spegazzini (LPS). In particular for the Patagonian region, those species registered by Spegazzini (1887a, b), Singer (1969) and Petersen (2000) are worth mentioning.

During the studies of macromycetes carried out since 1996 in Patagonia, Argentina, two infrequent species with clavarioid basidiomata were found. In this contribution they are described and illustrated, and their geographical distribution in Argentina is commented and extended.

The morphological and anatomical characteristics of the studied specimens were observed under light

microscope with brightfield illumination (BF) and differential interference contrast (DIC). Microscopic observations of the structures were performed using various dyes and reagents: lactophenol cotton blue, potassium hydroxide (KOH) 10% and Melzer’s reagent. Measurements were obtained from histological preparations mounted in water. The sizes for the basidiospores of the two described species were obtained from 20 measurements and represent the minimum and maximum values. Photomicrographs were taken with a digital camera USB 2.0. The specimens examined were deposited in the herbarium BCRU. The authors of the species are listed following Index Fungorum ([www.indexfungorum.org](http://www.indexfungorum.org)).

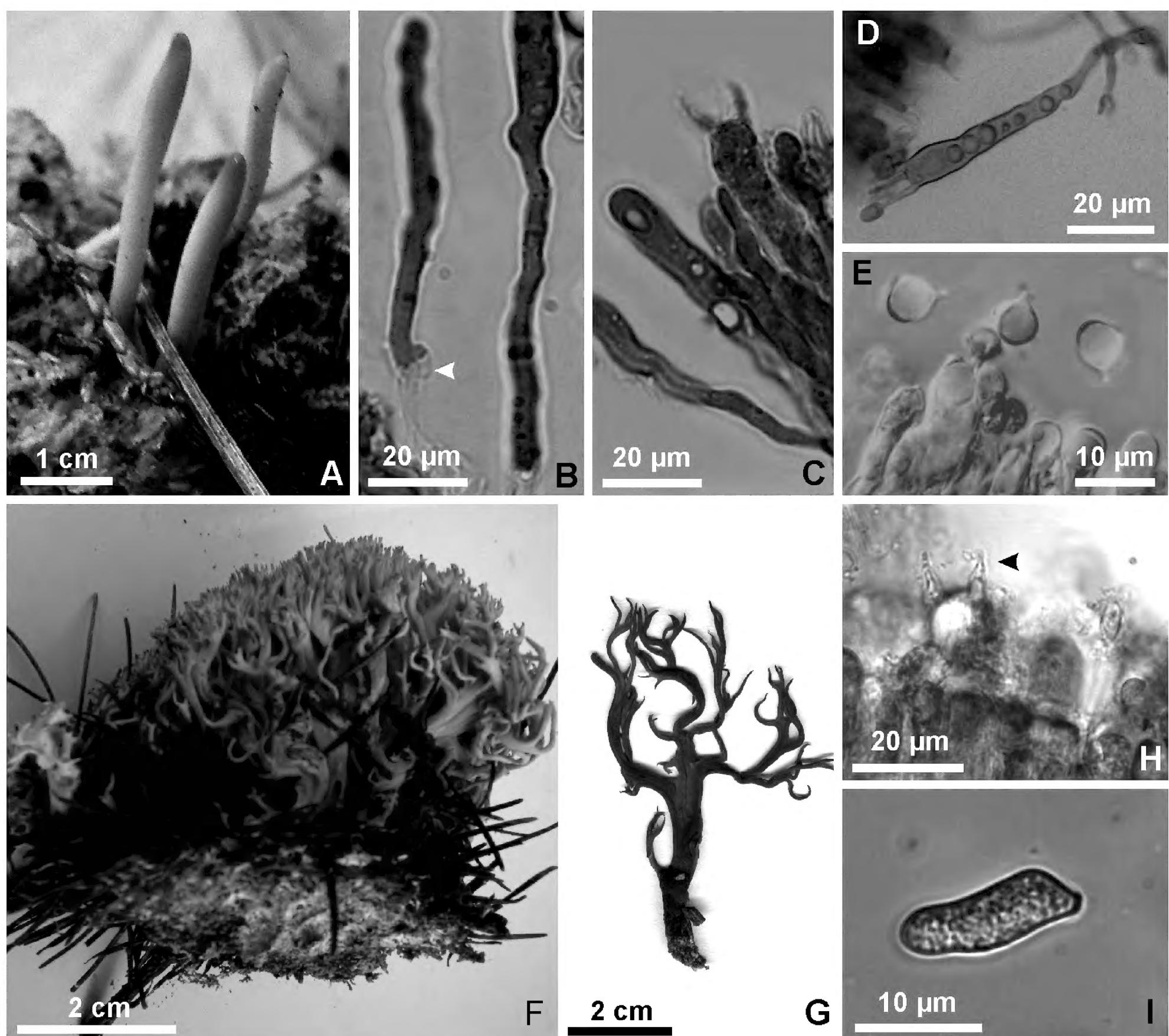
***Clavulinopsis laeticolor*** (Berk. and M.A. Curtis) R.H. Petersen, *Mycologia* 57: 522. 1965.

**BASIONYM:** *Clavaria laeticolor* Berk. and M.A. Curtis, *Journal of the Linnean Society, Bot.* 10 (no. 46): 338 (1868) [1869]. Holotype: Cuba, November, date? [K (M) 154585, *fide* Index Fungorum].

**SYNONYMS:** see [www.indexfungorum.org](http://www.indexfungorum.org). (Figure 1A–E).

Basidiomata gregarious, yellowish-orange becoming lighter toward the base, reddish-orange toward the upper part; claviform, cylindrical, at maturity up to 3 cm high and 0.3 mm wide, unbranched, straight to slightly curved; tips obtuse, tapering to the end; smooth surface. Context pale yellow, becoming greenish yellow with KOH 10%. Basidia cylindrical-claviform, 56–74 × 6–10 µm, with a conspicuous basal clamp connection; sterigmata 4, stout, 6–8 µm long, straight to slightly curved. Basidiospores globose, hyaline, smooth, 5–6 µm diam, with hilar appendix prominent, eccentric, papillate.

**NOTES:** The Patagonian studied specimens of *Clavulinopsis laeticolor* grow saprophytically in forest soil among mosses and litter. The species has been widely recorded worldwide (Petersen 1965; EOL 2013). Furthermore, other authors had recorded the species from



**Figure 1.** *Clavulinopsis laeticolor* (BCRU 5350). (A) basidiomata; (B) immature basidia with clamp connections (◀) at their bases; (C) mature basidium; (D) immature multiguttulate basidium; (E) basidiospores. *Lentaria rionegrensis* (BCRU 5351). (F) basidiomata; (G) basidiomata branch detail; (H) basidium, apical part with subcurved sterigmata (◀); (I) mature basidiospore.

Polynesia, Pitcarn Islands (Cooper 2011), Australia (May *et al.* 2004), Mexico (López Ramirez and García Alvarado 2008), Colombia (Vasco-Palacios and Franco-Molano 2013), Chile (Singer 1969) and Argentina (Corner 1957; Singer 1969). *Clavulinopsis laeticolor* was cited by Corner (1957) for the first time in South America, in Argentina as *Clavulinopsis pulchra* (Peck) Corner, from Río Cochuna, Tucumán province, and by Singer (1969) from Arroyo Frutilla, Neuquén province and Laguna Frías, Río Negro province. We can assume that *C. laeticolor* is an uncommon species in Argentina because of the restricted distribution in the subtropical rainforest and cool temperate forests, together with the scarce records of the species. The material collected by us represents a new occurrence of this species for Río Negro province, in a mixed forest of *Nothofagus dombeyi* (Mirb.) Oerst. (coihue), *Austrocedrus chilensis* (D. Don) Pic. Serm. and

*Bizzarri* (ciprés de la cordillera) and *Lomatia hirsuta* (Lam.) Diles ex J.F. Macbr. (radal).

MATERIAL EXAMINED: Argentina: Río Negro: Depto. Bariloche, Camino del Mallín Colorado (Senda Andina), between El Foyel (ruta nacional 40) the crossroad of ruta provincial 83 (parallel to Río Manso Inferior), 28-IV-2013, L.E. Lorenzo s.n. (BCRU 5350).

***Lentaria rionegrensis*** R.H. Petersen, *Revista de Biología Tropical* 48: 560. 2000. Holotype: Argentina, Neuquén, Parque Nacional Lanín, 19-V-1996, R.H. Petersen s.n. (TENN 55058). (Figure 1F-I).

Basidiomata up to 7 cm high and 9.5 cm broad, branched, gregarious; branches irregularly dichotomous, flexuous. Subiculum white, hard, extensive, immersed in the substratum joining the litter, up to 1.5 cm from the base of basidiomata; rhizomorphs white, conspicuous, up to 1.2

mm wide. Stipes numerous, closely packed, hard, flattened, beige to violaceus lightening toward the branches. Branches flattened, tips irregularly cristate, darker toward the apices. Hyphae of rhizomorph and subiculum 0.8  $\mu\text{m}$  diam., thick-walled, with common conspicuous clamp connections; crystals abundant, deposited between hyphae. Subhymenium rudimentary, undifferentiate, hyphae 4  $\mu\text{m}$  diam, clamped. Hymenium thickened; basidia 30–45  $\times$  6–9  $\mu\text{m}$ , clamped at the base, clavate, multiguttulate when young, cornute at maturity; sterigmata 4, up to 10  $\mu\text{m}$  long, subcurved; without cistidia. Basidiospores ellipsoids, sigmoids to undulated, hyaline, multiguttulate, thin walled, smooth, (15–)16–20(–22)  $\times$  4–7  $\mu\text{m}$ , hilar appendix tapering to the end, eccentric.

NOTES: As a result of the studies of their own collections of clavarioid fungi in Argentine Patagonia in May 1996, Petersen described the new species *Lentaria rionegrensis* (Petersen 2000). In that publication the paratype was located in "ARGENTINA, Prov. Río Negro, Parque Nacional de Lago Puelo, north shore of Lago Puelo...", however, that geographical reference has a mistake because this national park is included in the neighboring province of Chubut. Up to now the species *L. rionegrensis* has not been cited again. Therefore, the finding of this species in San Carlos de Bariloche (Península de San Pedro) represents the first record of *Lentaria rionegrensis* in Río Negro province.

The species has been registered in Neuquén province (Parque Nacional Lanín), and in Chubut province (Parque Nacional Lago Puelo and Parque Nacional Los Alerces) growing on decaying wood of *Nothofagus* sp. (Petersen 2000). Our specimens were collected growing on soil, between litter of *Pseudotsuga menziesii* (Mirb.) Franco (Oregon pine or Douglas fir) and *Pinus* spp.

MATERIAL EXAMINED: Argentina: Río Negro: Depto. Bariloche, San Carlos de Bariloche, Península de San Pedro, Smekal's family farm, 22-V-2013, H. Smekal s.n. (BCRU 5351).

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**Authors' contribution statement:** LEL collected one specimen, MIM and LEL examined and identified the collected specimens and wrote the text.

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